MATERIAL SAFETY DATA SHEET

1. SUBSTANCE AND SOURCE IDENTIFICATION

National Institute of Standards and Technology
Standard Reference Materials Program
100 Bureau Drive, Stop 2320
Gaithersburg, Maryland 20899-2320

SRM Number: 2658a
MSDS Number: 2658a
SRM Name: Oxygen in Nitrogen

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Description: This SRM mixture is supplied in a DOT 3AL specification aluminum (6061 alloy) cylinder with a water volume of 6 L. Mixtures are shipped with a nominal pressure exceeding 12.4 MPa (1800 psi), which provides the user with 0.73 m^3 (25.8 ft^3) of useable mixture. The cylinder is the property of the purchaser and is equipped with a CGA-580 brass valve, which is the recommended outlet for this oxygen mixture. NIST recommends that this cylinder **NOT** be used below 0.7 MPa (100 psi).

Substance: Oxygen in Nitrogen Gas Cylinder.

Other Designations: Compressed Oxygen/Nitrogen Gas Mixture.

2. COMPOSITION AND INFORMATION ON HAZARDOUS INGREDIENTS

Component	CAS Registry	EC Number (EINECS)	Concentration
Oxygen	7782-44-7	231-956-9	10 % mol/mol
Nitrogen	7727-37-9	231-783-9	balance

Index, R/S Phrases (EC): Not determined.

3. HAZARDS IDENTIFICATION

NFPA Ratings (Scale 0–4): Health = 1 Fire = 0 Reactivity = 0

Major Health Hazards: Difficulty in breathing.

Physical Hazards: Cylinder may rupture or explode if exposed to heat.

Potential Health Effects (Short Term Exposure)

Inhalation: Irritation of the mucous membranes, changes in body temperature, nausea, vomiting, difficulty breathing, irregular heartbeat, headache, drowsiness, dizziness, disorientation, hallucinations, mood swings, tingling sensation, pain in extremities, tremors, loss of coordination, lung congestion, convulsions, coma.

Skin Contact: No information on significant adverse effects.

Eye Contact: Irritation, blurred vision.

Ingestion: Ingestion of a gas is unlikely.

Listed as a Carcinogen/Potential Carcinogen

	Yes	No
In the National Toxicology Program (NTP) Report on Carcinogens		X
In the International Agency for Research on Cancer (IARC) Monographs		X
By the Occupational Safety and Health Administration (OSHA)		X

4. First Aid Measures

Inhalation: If adverse effects occur, remove to uncontaminated area. If not breathing, give artificial respiration by qualified personnel. Get immediate medical attention.

Skin Contact: Wash affected skin with soap and water for at least 15 minutes while removing contaminated clothing. Get medical attention, if needed.

Eye Contact: Immediately flush eyes, including under the eyelids, with copious amounts of water for at least 15 minutes. Get immediate medical attention.

Ingestion: Ingestion is of gas is unlikely.

5. Fire Fighting Measures

Fire and Explosion Hazards: Negligible fire hazard. Cylinder may rupture or explode if exposed to heat. Escaping gas mixture promotes combustion of surrounding materials.

Extinguishing Media: Regular dry chemical, carbon dioxide.

Fire Fighting: Move cylinder from fire area if it can be done without risk. Avoid inhalation of material or combustion by-products. Wear full protective clothing and NIOSH-approved self-contained breathing apparatus (SCBA).

Flash Point (°C): Not Applicable **Autoignition (°C):** Not Applicable **Method:** Not Applicable

Flammability Limits in Air (Volume %): **Upper:** Not Applicable

Lower: Not Applicable

Flammability Class (OSHA): Not applicable

6. Accidental Release Measures

Occupational Release: Stop leak if possible without personal risk. Isolate hazard area and deny entry. Stay upwind and keep out of low areas. Refer to Section 13 “Disposal Considerations”.

7. Handling and Storage

Storage: Store and handle in accordance with all current regulations and standards. Secure cylinder to prevent physical damage. Keep valve protective cap on cylinder when not in use. Keep separated from incompatible substances. Subject to storage regulations: U.S. OSHA 29 CFR 1910.101.

Safe Handling Precautions: Wear safety goggles. See Section 8 “Exposure Controls and Personal Protection”.

8. Exposure Controls and Personal Protection

Compressed Oxygen/Nitrogen Gas Mixture

ACGIH (inhalation): simple asphyxiant

UK OES (inhalation): simple asphyxiant

Ventilation: Ensure compliance with applicable exposure limits.

Respirator: If necessary, refer to the “NIOSH Guide to the Selection and Use of Particulate Respirators Certified under 42 CFR 84” for selection and use of respirators with organic vapor cartridges certified by NIOSH.

Eye Protection: Wear safety goggles. **DO NOT** wear contact lenses in the laboratory. An eye wash station should be readily available near of handling and use areas.

Personal Protection: Wear protective clothing and chemically resistant gloves to prevent skin exposure.

9. PHYSICAL AND CHEMICAL PROPERTIES

Compressed Oxygen/Nitrogen Gas Mixture
Appearance and Odor: colorless and odorless gas
Density (g/cm^3): < 1
Solubility in Water: slightly soluble

10. STABILITY AND REACTIVITY

Stability: X Stable _____ Unstable

Stable at normal temperatures and pressure. **Incompatible Materials:** Combustible

Conditions to Avoid: Combustible materials, halo carbons, metals, bases, reducing agents, amines, metal salts, oxidizing materials. Protect from physical damage. Cylinder may rupture or explode if exposed to heat.

Fire/Explosion Information: See Section 5 "Fire Fighting Measures".

Hazardous Decomposition: Thermal decomposition or combustion produces miscellaneous products.

Hazardous Polymerization: _____ Will Occur X Will Not Occur

11. TOXICOLOGICAL INFORMATION

Route of Entry: X Inhalation _____ Skin _____ Ingestion

Compressed Oxygen/Nitrogen Gas Mixture: Simple asphyxiant.

Health Effects (Acute Exposure):

The symptoms of asphyxia depend on the rapidity with which the oxygen deficiency develops and how long it continues. In sudden acute asphyxia, unconsciousness may be immediate. With slow development there may be rapid respiration and pulse, air hunger, dizziness, reduced awareness, tightness in the head, tingling sensations, incoordination, faulty judgment, emotional instability, and rapid fatigue. As the asphyxia progresses, nausea, vomiting, collapse, unconsciousness, convulsions, deep coma and death are possible.

Medical Conditions Generally Aggravated by Exposure: No data available.

12. ECOLOGICAL INFORMATION

Environmental Summary: Not available.

13. DISPOSAL CONSIDERATIONS

Waste Disposal: Dispose in accordance with all applicable federal, state, and local regulations.

14. TRANSPORTATION INFORMATION

U.S. DOT and IATA: Compressed gas; N.O.S.(Oxygen in Nitrogen); UN1956; Hazard Class 2.2.

Canadian Transportation WHMIS: No classification assigned.

15. REGULATORY INFORMATION

U.S. REGULATIONS

CERCLA Sections 102a/103 (40 CFR 302.4): Not regulated.

SARA Title III Section 302 (40 CFR 355.30): Not regulated.

SARA Title III Section 304 (40 CFR 355.40): Not regulated.

SARA Title III Section 313 (40 CFR 372.65): Not regulated.

OSHA Process Safety (29 CFR 1910.119): Not regulated.

SARA Title III Sections 311/312 Hazardous Categories (40 CFR 370.21)

ACUTE: Yes
CHRONIC: No
FIRE: No
REACTIVE: No
SUDDEN RELEASE: Yes

STATE REGULATIONS

California Proposition 65: Not regulated.

CANADIAN REGULATIONS

WHMIS Classification: Not determined.

EUROPEAN REGULATIONS

EC Classification: Not determined.

EC Risk and Safety Phrases: Not determined.

NATIONAL INVENTORY STATUS

U.S. Inventory (TSCA): Listed on inventory.

TSCA 12(b), Export Notification: Not listed.

16. OTHER INFORMATION

Sources: MDL Information Systems, Inc., MSDS *Inert Gas (Oxygen in Nitrogen)*, 16 September 2004.